DONDERIZING

A PARKER
PROCESS THAT
HOLDS PAINT
TO STEEL AND
RESISTS RUST





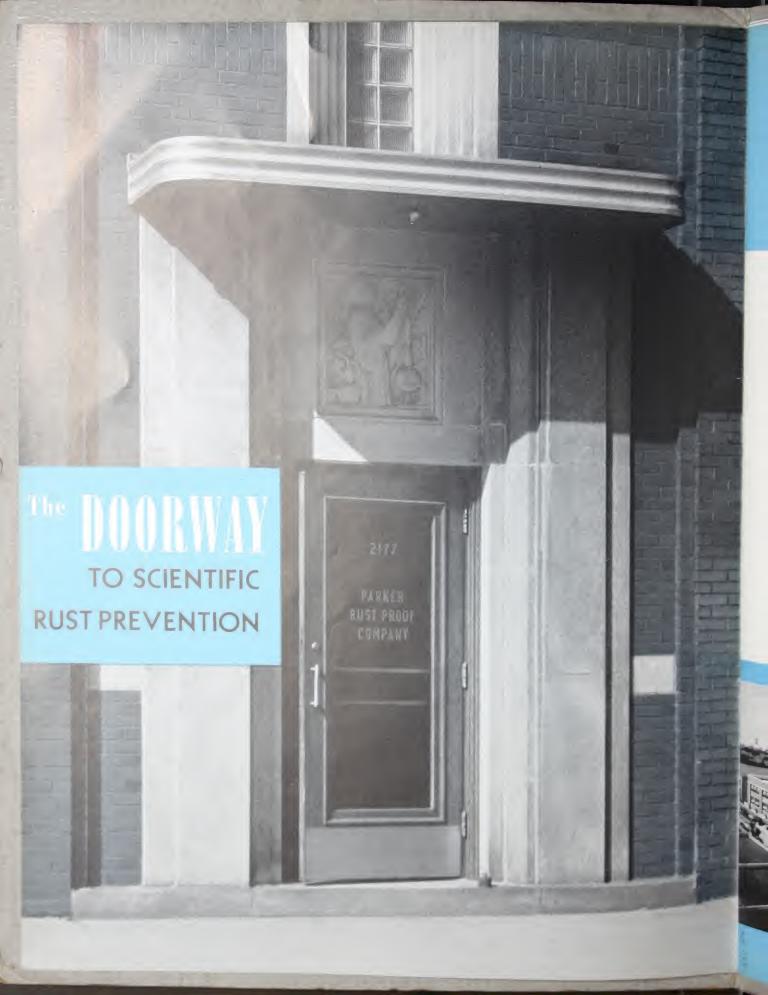




DONDERIZING

A RUST RESISTING
BASE FOR PAINT
FINISHES THAT
CAN BE QUICKLY
AND EASILY
PRODUCED

PARKER RUST PROOF COMPANY, DETROIT, MICHIGAN



BONDERIZING...FOR PAINT ADHESION AND RUST RESISTANCE

FOR nearly 24 years this company has devoted its energy and resources exclusively to the study and development of economical and effective rust prevention for iron and steel products.

Bonderizing is a modern development, designed to keep step with fast moving industries. Its purpose is to provide a rust inhibiting paint base that can be produced quickly and easily, and at the same time assure more positive adhesion and durability of applied finishes on iron, steel or zinc surfaces.

Since its introduction in 1929, Bonderizing has found its way into the finishing systems of hundreds of the largest manufacturing plants in the world, where the products require the greatest measure of protection and finish beauty. It is a tried and proven process that has attained world-wide acceptance.



WHY BONDERIZING PROTECTS

HILE some protective methods involve the application of either paint or some more stable metal to the steel surface, Bonderizing is a chemical treatment in which the surface of steel is by chemical reaction converted to a protective coating. In other words, the process entails actual chemical reaction between the metal and the Bonderizing chemicals, whereby the surface is changed into a composition that is insoluble in water and hence highly resistant to the effects of moisture.

The crystalline coating produced provides the best type of base for paint finishes and being integral with the metal itself, it assures greater adhesion than any other available known type of finish.

The Bonderizing Process is not only used more extensively on sheet metal units requiring a type of finish that will provide a high degree of rust resistance and maintain fine appearance over a period of years, but is now so improved as to widen its scope of effectiveness to include hot rolled steel, zinc coated surfaces, and zinc base die castings. Important Bonderizing applications include automobile bodies, wheels, fenders and hoods, as well as refrigerators, sterilizing and medicine cabinets and numberless other products of similar character as well as window sash and galvanized sheet steel.

The difficulty of maintaining paint finishes is due to three main causes: Corrosion of the underlying metal, lack of adhesion of the paint film to the metal, and the durability of the organic paint film itself. It was to overcome the first two of these difficulties of finish maintenance that Bonderizing was developed.

The result obtained by Bonderizing is a chemical conversion of the metallic surface to a non-metallic



Photomicrograph of a piece of plain, polished sheet steel. Photo enlargement 100 times. There is no satisfactory foothold here for a paint finish.



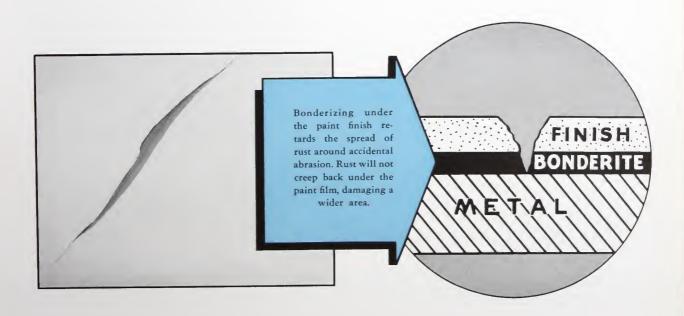
Photomicrograph of a piece of sheet steel after treatment by a Parker Process. Photo enlargement 100 times. This is an adhesive base for paint

METAL SURFACES AND PROVIDES A BETTER FINISH BASE

phosphate coating composed of millions of microscopic crystals, integral with the metal, and as such has greater adherence than any other known protective coating. Being insoluble in water, this coating effectively retards corrosion, resulting from the small amount of moisture that may penetrate the paint film. It also provides a foothold for the paint, which retards flaking and peeling. The finishing material flows into the interstices between the fine crystals and, when dry, is securely anchored to the metal. There is no distortion nor dimensional change resulting from the Bonderite Process.

Bonderizing eliminates, so far as possible, the human element in obtaining a satisfactory surface for painting. It not only provides for better adhesion and durability of finishes applied over it, but provides a check on cleaning operations as well. It removes the last traces of grease or drawing compounds, neutralizes any residual alkali or surface rust remaining on the work, and eliminates hand marks that may have accumulated prior to processing.

More than that, should the paint film be scratched or dented so that bare metal is exposed, the Bonderite coating retards the spread of rust and the development of alkali through electro-chemical activity around the injury. It is a non-conductor of electrical currents, affording protection from electro-chemical corrosion of the metal. Should the paint film become scratched or damaged in any way, rust will be confined to the damaged area.



WHY THE BONDERITE COATING RETARDS THE SPREAD OF RUST

ONE theory of the cause of rust is the chemical action resulting from electrolysis, but whether or not one accepts the electro-chemical theory of corrosion, laboratory research has established the fact that, in addition to the visible accumulation of rust in the actual abrasion, the dissolving iron or steel develops an alkali which creeps back between the metal and applied finish, destroying the adhesion over an ever-widening area.

This is demonstrated experimentally by placing a steel panel in agar agar to which has been added potassium ferricyanide and phenolphthalein, to test for ferrous iron and alkali, respectively. Any piece of steel will develop electro-positive and electronegative areas.

One can never tell before testing just where these electro-negative and electro-positive areas will occur, but we have never failed to get a strong test for ferrous iron at one area and a strong test for hydroxyl ion, or alkali, at the other. However, these areas will be indicated in the agar agar, a blue color showing where the ferrous iron dissolves and strong pink showing where the alkali develops.

Incidentally, this test also indicates a type of cleaning that should be avoided in preparing iron or steel for paint finishes. It is found that bare steel panels that have been treated with any kind of acid before subjecting them to this test show a much greater concentration of alkali than those that have not been so treated. This may seem strange at first, but when one realizes that the amount of hydroxyl ion that will migrate to the electro-positive area depends on the amount of iron that dissolves from the electronegative area, and that any pickling effect will cause iron to dissolve more rapidly, this statement does not seem so strange. It is well known that any pickle will cause iron to corrode more rapidly, and it is proven by tests on panels that have been treated with 5% phosphoric acid and placed in the agar agar medium that almost instantly a blue color appears in the agar agar due to the solution of the iron.

It usually takes longer for the pink to show up because the hydroxyl ion must first neutralize the hydrogen ion from the acid present on the panel, but when this neutralization once has taken place, the phenolphthalein indicator turns decidedly red very quickly. The fact that enough hydroxyl ion will concentrate at an electro-positive area to neutralize so much free acid gives some idea of how important the formation of alkali is from a paint standpoint.

With this knowledge of what actually takes place under the paint film when applied to steel, obviously something besides efficient cleaning and high-quality paint is necessary to fix the coating and prevent premature failure.

Bonderizing before finishing will stop the spread of rust and alkali underneath the paint film, even when the paint film is scratched sufficiently to allow corrosion to take place. And, in proof of this, if a Bonderized panel is placed in the same agar agar medium referred to above, we get practically no test for ferrous iron and none for alkali.

The Bonderite coating is an insulator and consequently stops the flow of small electrical currents, so that the alkali does not migrate to the electropositive areas, and does not become sufficiently concentrated to cause paint failures.

It is certain that even though rust will cause lack of adhesion to a paint film, the alkali formed as a result of corrosion is much more pernicious and causes much greater lack of adhesion in paint than the rust itself.

Bonderite not only prevents the development of alkali under the finish, which might be caused by porosity of the paint film, but avoids the possible loosening of the finish by vibration or shock.



Figure 1 is a photograph of a plain, untreated steel panel carrying two coats of baked enamel, pricked and subjected to 228 hours in the salt spray. Light areas show where alkali has destroyed the paint film surrounding rusted abrasion.



Figure 2 is a Bonderized steel panel with two coats of baked enamel, pricked and subjected to 228 hours in the salt spray. Slight rust appears where metal was exposed, but no spreading of corrosion or alkali to surrounding area has taken place.



Figure 3 is a reproduction of four-color photograph of plain, untreated steel sample tested in agar agar medium. Blue areas indicate dissolving ferrous iron. The pink area shows the development of alkali.



Figure 4 is a reproduction of four-color photograph of a Bonderized sample tested in same agar agar medium as Figure 3. No reaction for dissolving iron or alkali development is apparent.



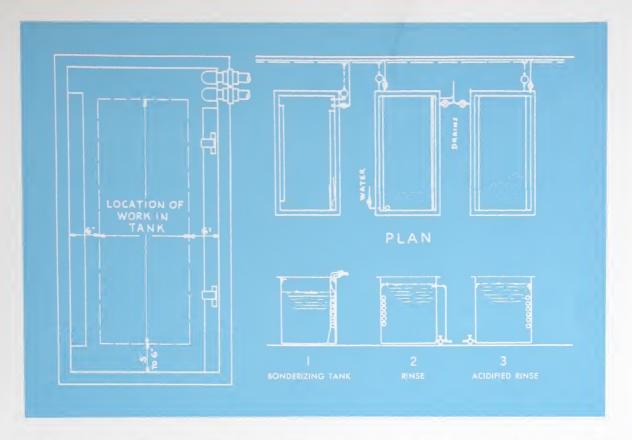
Showing the simple tank arrangement for Bonderizing. Tanks numbered 1, 2 and 3 provide for Bonderizing, clear water rinse and acidified rinse.

APPLICATION OF THE BONDERIZING PROCESS

THE Bonderizing Process may be applied in either one of two ways, depending upon the type of product to be treated and the amount of production to be handled daily. They differ only in the type of equipment needed. Fundamentally, and for all practical purposes the chemical reaction, coating produced and rust-proofing results are the same. The solution will react upon iron, steel, zinc and cadmium surfaces.

The two different methods of applying Bonderizing are Immersion and mechanical Spraying. The Parker technical staff not only recommends the type of installation best suited to the manufacturer's requirements, but designs and supplies blue prints for the entire installation. Like all metal finishing methods, Bonderizing requires a clean surface and in both types of Bonderizing installations, the proper cleaning and rinsing equipment is usually included in the installation plans. There are, of course, many detailed variations to fit them to the physical and production requirements, but such variations are worked out in advance by the Parker technical staff.

The processing bath is prepared by mixing the necessary Bonderite Chemicals with water and either immersing or mechanical spraying the production for a sufficient time to transform the metal surface to a phosphate coating. Time required is from one to five minutes, depending upon the method used and type of product being treated.



THE IMMERSION METHOD OF BONDERIZING

THE immersion type of Bonderizing installation consists of a simple still tank, fitted with suitable equipment for heating the solution, in which the production is dipped by means of racks, baskets, or other similar devices, together with the necessary complementary cleaning and rinsing tanks. It is especially adapted to the needs of the manufacturer whose production requirements are limited.

While the complete process is standardized so far as procedure is concerned, there is no "standard" style, size or shape of tank equipment. Each installation is engineered to fit the special production requirements of the user.

The set-up for immersion Bonderizing will ordinarily include a heated tank for alkali cleaning, a heated tank for clear water rinse, the Bonderizing tank, followed by another hot water rinse and a final hot chromic acid rinse. All units of the installation, including cleaning, processing and rinsing are

usually placed in line so that one overhead track and hoist will serve for all the tanks.

The Bonderizing tank should be insulated to conserve heat and fitted with heating units of sufficient size to maintain the solution at 180 degrees F.

The processing bath is prepared by mixing the concentrated Bonderite chemicals with water, in which the cleaned production is immersed for a sufficient length of time to produce the characteristic phosphate coating. Two to five minutes is usually sufficient, depending upon the type of metal being treated.

As the chemical strength of the bath is depleted, it is restored by the addition of Bonderite replenishing chemical.

The amount of Bonderite required to bring the bath back to normal chemical concentration is determined by a simple titration test that is easily accomplished by the operator.

SPRA-BONDERIZING . . .

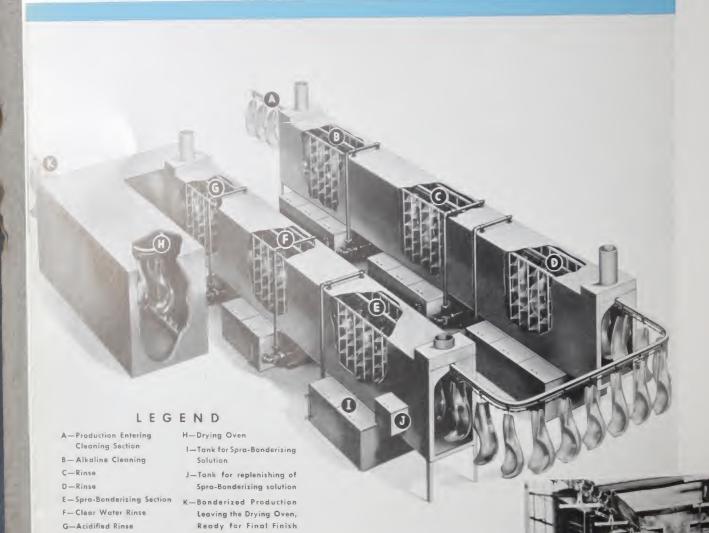


ILLUSTRATION SHOWS THE COMPLETE SPRA-BOND-ERIZING PROCESS FROM CLEANING TO DRYING.

Spra-Bonderizing equipment is particularly well adapted to production of large volume and it will appeal to manufacturers whose rust-proofing requirements are large and continuous.

Spra-Bonderizing line in a large automobile plant.

FOR HIGH SPEED MASS PRODUCTION

K EEPING in step with the modernization of mass production industries, Spra-Bonderizing has been developed to meet such mass production requirements and is a great forward step in one of the most advanced methods of stabilizing paint finishes on iron, steel and zinc surfaces.

Spra-Bonderizing supersedes and replaces the older conveyor system, whereby the production was passed through a huge tank of processing solution. Now processing is accomplished by spraying the Bonderite solution onto the production as it passes through different chambers on a completely mechanized conveyor line, including cleaning, Bonderizing, rinsing and drying.

Due to the short processing time, equipment requirements are minimized, less floor space is needed, and, by recirculating the solution, it is possible to process a given amount of work with a smaller volume of working solution.

As the work progresses on the conveyor line through the various steps of cleaning, Spra-Bonderizing and rinsing, it passes a series of standpipes equipped with spray nozzles through which the solution is forced against the material from every conceivable angle, flooding all areas to be treated. The equipment is assembled in a steel housing with

reservoirs below, where solutions are accumulated, ready for circulation. Control of the processing bath is the same as that followed in the immersion method.

While cleaning is not a part of the Spra-Bonderizing Process, yet, like all other metal-finishing processes, a clean surface is necessary for satisfactory results and cleaning is included in the set-up as one of the normal operations in a completely mechanized line. Rinsing is included, after cleaning; also after the processing operation—after cleaning to make sure that no foreign matter is carried into the Bonderizing section, and, after processing, to remove any traces of processing solution prior to the chromic acid rinse and drying.

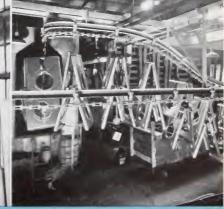
Immediately following cleaning the production is sprayed with Bonderizing solution. Reaction on the metal is immediate. The size of the processing section and speed of the conveyor are adjusted to allow usually sixty seconds in the Bonderizing spray.

Normally, production passes immediately from the Spra-Bonderizing section to dual rinsing, and then to final finishing. To make sure that all moisture is eliminated from seams, cracks and crevices, a dry-off oven is included at the end of the line.



Automobile bodies on their way to Spra-Bonderizing.

Refrigerator cabinets entering the Spra-Bonderizing section.



Washing machine parts in the Spra-Bonderizing Process.

WHERE BONDERIZING IS USED ... THE BONDERIZED CAR



HILE Parker Processes are found to some extent on practically every car made today, there being some 1,100 Parker Processed parts on one popular make, more than 90% of the cars produced carry Bonderizing on their fenders and other sheet metal parts. In fact, each year sees further extensive use of this protective process on a greater number of parts as it is applied to bodies, hoods, mouldings and wheels.

With the rapid increase in the use of Bonderizing by the automobile companies, it is not surprising that there should be a still greater increase in its use on all types of automobile accessories. Once an automobile builder recognizes the value of Bonderizing, he insists on similar protection by suppliers of accessories such as wheels, lamps, horns, heaters, bumper brackets and scores of smaller parts.

In addition, there are many accessory manufacturers who adopt Bonderizing, not to meet manufacturer's specifications, but as a sound quality feature of a well-manufactured product.

Of all the products to which Bonderizing is applied, none of them demonstrate its rugged character quite so forcefully as its use on the automobile. Being in many cases continually exposed to the weather and under the necessity of presenting a fine finish appearance for a number of years, Bonderizing provides better finish protection than can be secured in any other way. After nearly ten years' experience with the effects of Bonderizing, the dealer sells the Bonderized car with the assurance that, barring accident, the owner will not be subjected to untimely finish reconditioning expense.



BONDERIZING IN VARIED INDUSTRIES

AMONG the larger units to which Bonderizing is applied are refrigerator cabinets, washing machines, medicine cabinets, sterilizing cabinets, outdoor display cabinets, grave vaults, gasoline pumps, dental chairs and many others.

The conditions surrounding refrigerators are especially conducive to rust. Cold inside and warm outside induce condensation, unless perfect insulation can be provided, which is not always the case. The steaming, humid atmosphere of the kitchen or restaurant is especially corrosive. It seeks out and creeps through microscopic openings in the finish and sets up corrosion until the whole panel is affected. Bonderizing under the finish overcomes this difficulty.

The gasoline pump cabinet is benefitted by Bonderizing for two reasons: To offset the effects of constant weather exposure and to resist the action of the various fumes to which the finish is subjected. Bonderizing helps to reduce the cost of station maintenance and keeps pump equipment looking better without frequent refinishing.

The considerable list of Bonderite users is being extended rapidly. It is finding its way into the finish-

ing lines of many varied industries, helping to maintain finish appearance and cut down complaints because of rusty products.

It is ever opening market possibilities for some products, such as in the case of zinc die castings—by permitting highly durable paint-type finish—so that they can now be assembled into a complete product, where such finish of the die cast parts is necessary from an appearance standpoint.

Additional products on which Bonderizing is providing protection from rust are:

Advertising signs
Airplane parts
Bicycles
Calculating machines
Clothes hampers
Dish washing machines
Hospital beds
Ice cream freezers
Filing equipment
License plates
Loose-leaf binder metal
Milk separator parts
Bottle coolers
Refrigerated display cabinets

Road signs
Steel furniture
Soap dispensers
Thermostats
Signaling devices
Switchboards
Tool boxes
Typewriters
Vacuum cleaners
Vending machines
Washing machines
Waste baskets
Water coolers



BONDERIZING ON ARCHITECTURAL MATERIAL



IN most cases it is possible to buy iron or steel building equipment with Bonderizing applied as part of standard finishing practice. It is now used in the mass production finishing systems of most of the leaders in the manufacture of steel windows, also by makers of air conditioning equipment, medicine cabinets, switch and meter boxes, window screens, elevator cabs, steel partitions, as well as galvanized sheets, from which eave troughs, doors and display racks are made.

The desirability of Bonderizing on metal that is to be exposed to weather or inside moisture and humidity is a well known fact. In actual salt spray tests on thousands of test pieces, it is found that Bonderizing increases the effectiveness of paint coatings anywhere from three to five times, depending upon the type of paint and method of application. It prevents untimely rust and reduces the cost of upkeep and better appearance is maintained. Manufacturers of architectural products will find this a strong selling point.

A few outstanding manufacturers of Architectural products using Bonderizing:

STEEL WINDOWS	STEEL	WINDOWS	
---------------	-------	---------	--

Campbell Metal Window Corp	Baltimore, Md.
Detroit Steel Products Co.	Detroit, Mich.
Fentron Steel Works, Inc.	Seattle, Wash.
Soulé Steel Co.	San Francisco, Calif.
J. S. Thorn Co.	Philadelphia, Pa.
Truscon Steel Co.	Youngstown, Ohio

STEEL SCREEN FRAMES

Chamberlain	Metal Weatherstrip Co.	Detroit, Mich.
Johnson Met	al Products Co.	Erie, Pa.

BATHROOM CABINETS

Faries Manufacturing Co.	Decatur, III
Hess Warming & Ventilating Co.	Chicago, Ill

AIR CONDITIONING EQUIPMENT

Airtemp,	Inc.			Dayton,	Ohio
Standard	Air Conditioning	Co.	New	Rochelle,	N. Y.
York Ice	Machinery Corp.			Yor	k, Pa.

STEEL PARTITIONS

Martin Par	ry Corp.	York, Pa
Martin Par	ry Corp	York

PAINTGRIP GALVANIZED SHEETS

American Rolling Mill Co. Middletown, Ohio

LABORATORY TESTS THAT PROVE EFFECTIVENESS

USUALLY the manufacturer with a metal finishing problem involving the stabilizing of paint, enamel or lacquer, requires immediate action. Almost always the need for a solution of his problem is such that he is unable to await the result of tests of prospective finishes or processes under atmospheric conditions.

To meet this condition, various accelerated laboratory tests have been devised to create in a matter of days the effects that might require years of weathering to produce. While there are many different tests for checking the comparative resistance of various coatings, the salt spray and humidity tests have been widely adopted by industry in checking enamels and lacquers.

The salt spray test is accomplished by exposing the test pieces to a mist of a 20% solution of ordinary salt. The breakdown of the test piece is usually characterized by the flaking of the finish from increasingly large areas as the test progresses.

The humidity test is accomplished by subjecting the test pieces to 100% humidity at temperature of 100 degrees F. The breakdown of the test pieces is indicated by the blistering of the paint film.

The Soak test consists of immersing the samples in water, maintained at 100° F.

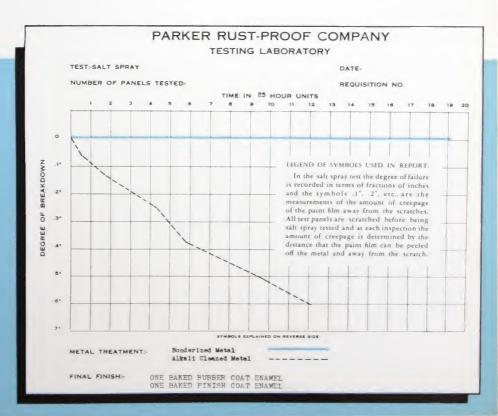
In order to visualize for the interested investigator the value of Bonderizing as a base for various paint finishes, as compared to other methods of preparing metal for painting, charts of several different accelerated tests are included herewith, showing a carefully kept record of results. These are authentic tests which can be demonstrated any time for any manufacturer, either on testing panels or on samples of actual production.

SALT SPRAY TEST

Two Coats Baked Enamel

Result of a salt spray test on two panels, one of which was Bonderized and the other given an ordinary alkali cleaning, each finished with one rubber coat of baked enamel and one coat of baked finish enamel. The Bonderized panel remained in good condition for nearly 500 hours, while the finish on the non-Bonderized piece was completely destroyed in a trifle over 300 hours.

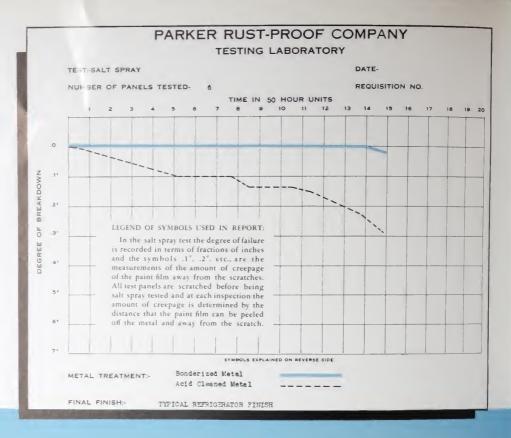
PL

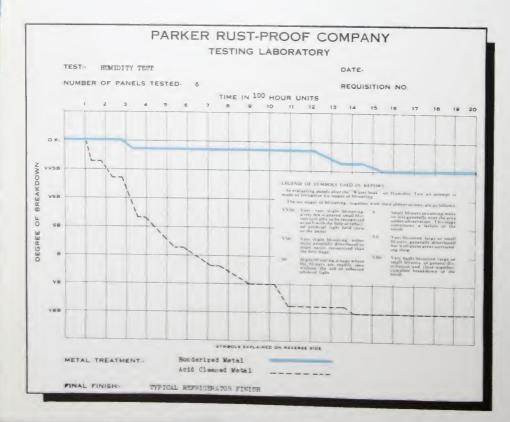


SALT SPRAY TEST

Typical Refrigerator Finish

Test on panels, one Bonderized and one acid cleaned. The Bonderized piece was in good condition at the end of 700 hours, while the one not Bonderized showed definite deterioration at less than 100 hours.

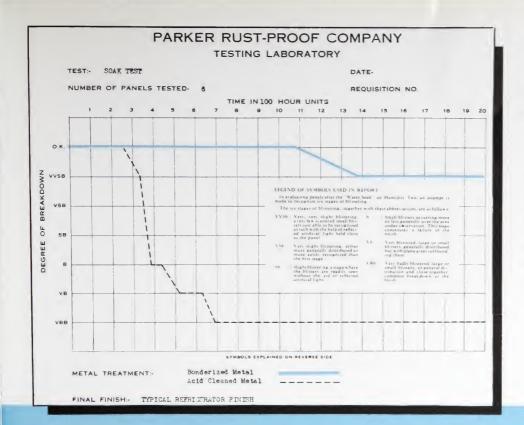




HUMIDITY TEST

Typical Refrigerator Finish

Test on panels, one Bonderized and one acid cleaned. Bonderized sample showed only slight deterioration at the end of 1200 hours, while finish on non-Bonderized panel was practically destroyed.



SOAK TEST

Typical Refrigerator Finish

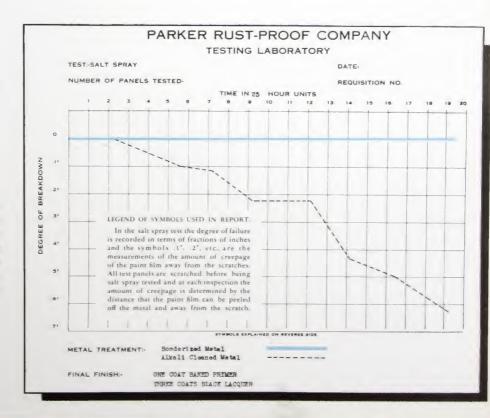
Test on panels, one Bonderized and one acid cleaned. Bonderized sample showed good condition up to 1100 hours, while non-Bonderized sample began precipitous breakdown at about 250 hours.

SALT SPRAY TEST

One Coat Baked Primer

Three Coats Black Lacquer

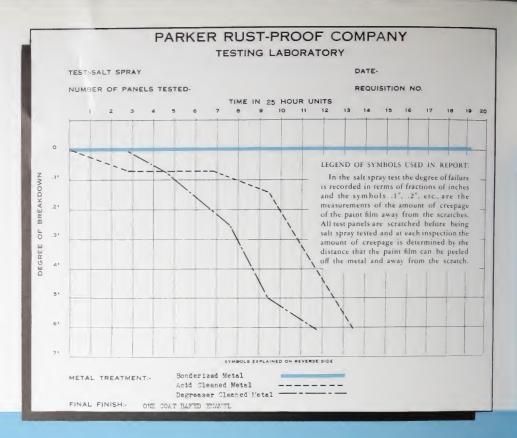
Test on two panels, one Bonderized and one alkali cleaned. Bonderized piece was in good condition at 450 hours, while finish was definitely broken on non-Bonderized piece at 125 hours.

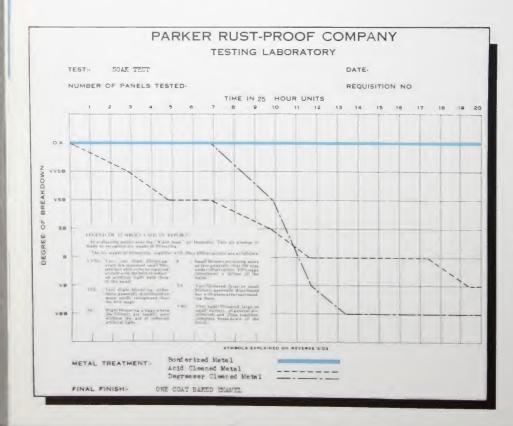


SALT SPRAY TEST

One Coat Baked Enamel

Test on three samples, one Bonderized metal, one degreaser cleaned and one acid cleaned. Bonderized piece was in perfect condition at 480 hours, while non-Bonderized acid-cleaned sample showed almost immediate deterioration. Finish on degreased sample began to show effect of test at about 70 hours.





SOAK TEST

One Coat Baked Enamel

Test on three samples, one Bonderized, one degreaser cleaned and one acid cleaned. Finish on Bonderized sample perfect at 500 hours, while both competing samples badly blistered at 500 hours.

RESULTS OF SALT SPRAY TEST





PHOTOGRAPHS of two test panels given typical refrigerator finish and subjected to salt spray (20% solution) for more than 700 hours. Panels and finishing are identical except that the test panel at the left was acid cleaned, while the panel at the right was Bonderized before finishing.



RESULTS OF WATER-SOAK TEST

PHOTOGRAPH of two panels subjected to soaking in plain tap water maintained at a temperature of 100 degrees F. Both panels were given typical refrigerator finish. The non-Bonderized piece at left indicated very bad blistering at the end of 700 hours.





SUB-TROPICAL EXPOSURE TEST





PHOTOGRAPH of small sections of panels exposed to subtropical atmosphere for six months, to visualize the resistance of the paint to corrosive atmospheric conditions.

The section at the top was not Bonderized before finishing and demonstrates the development and creepage of alkali under the enamel, as described on page six. The lower panel was Bonderized before finishing, and shows the greater resistance to alkaline development.

Enlargement six times.

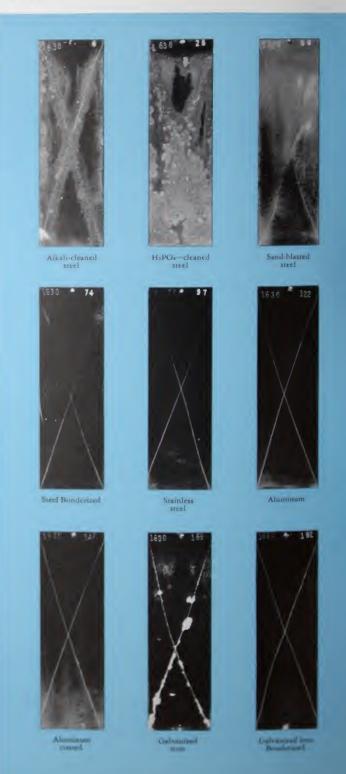


RESULTS OF EIGHTEEN MONTHS WEATHERING TEST

ARIOUS circumstances make it necessary to quickly determine the durability of paint finishes over metal surfaces. In addition to the various accepted accelerated tests, such as the Salt Spray, Humidity and Soak tests, outdoor exposure tests are made.

Next to actual service tests, outdoor exposure tests are the most reliable for estimating the durability, or useful life of paint films. They approximate as nearly as possible the actual service conditions in which the paint films are generally used.

The painted panels exposed in this test were purposely scratched with a sharp instrument, exposing a narrow section of the base metal and placed in test racks at Miami, Florida, at 45° angle, facing south. The exposure lasted 18 months and the illustrations attached are photographs taken after the test was completed. It will be noted that the Bonderized pieces are still in good condition, while the finishes on other samples show more or less failure.



TESTING BONDERIZING ON HOT ROLLED STEEL SASH



TITH the increasing use of steel sash, the use of Bonderizing has been extended to include the effective treatment of hot or cold rolled steel from which most of this type of product is made.

Finishes on steel sash must successfully resist both outdoor exposure and humidity. Bonderizing provides resistance to both of these hazards through greatly improved adhesion of the paint and by protecting the metal from the moisture that may penetrate the paint film.

The illustrations at the left show how primer painted sections reacted to accelerated humidity and salt spray tests. Figures No. 1 and No. 2 show the comparative resistance to humidity of a Bonderized section (No. 1) and a section primed over bare metal (No. 2). Both tested for the same length of time. Figures No. 3 and No. 4 show the results of a salt spray test on similar sections, one of which was Bonderized (No. 3) while No. 4 was primer painted over bare metal. Both tested for the same length of time.

BONDERIZING ZINC SURFACES AS A BASE FOR PAINT FINISHES

comme for 18 months. Galvanized panel identical with panel at left, except that it was not Bon-derized before applying the lacquer. The finish has definitely failed after 18 months exposure.

WHILE Bonderizing was originally designed to produce a rust-inhibiting phosphate coating on iron and steel only, as an integral paint base, it has been perfected to such an extent that the same corrosion resisting and paint holding qualities can be extended to galvanized, galvannealed, zinc alloy and cadmium surfaces.

Thus it becomes possible in all Bonderizing installations to treat entirely ferrous metal production, entirely zinc, galvanized, galvannealed or cadmium surfaced production, or any percentage mixture of these metals.

There are no variations necessary in technique or formula, except as to processing time. Ferrous metal processing time remains the same, according to the type of production being treated, but in the case of zinc surfaces the processing time for all types of installations is from one to five minutes, varying with the type of production treated.

Recent wide development of zinc alloy and zinc surfaced products, to which paint, enamel or lacquer are to be applied, widens the scope of utility of Parker Processes and greatly extends their field of useful service.





FOR many years industry has been handicapped in the application of paint to die cast zinc alloys, or zinc coated articles for the reason that zinc salts form under the paint, either through reaction between the atmosphere and zinc when the paint film is broken, or through reaction of the ingredients of the paint itself, causing lack of adhesion and permitting the paint to peel off.

d steel

s 6660

Same

nized

onder-

y fer

n sur

mix

ry ill

o the

UL ID

ssing

from

hich

ends

Where paint finishes on zinc surfaces were essential, it was common practice to expose the uncoated zinc to weathering or acid etching, permitting oxidation of the zinc surface. This provided a fairly suitable base for paint as the compounds formed prevented further reaction. The slowness of the weathering method is an obvious handicap.

If untreated zinc surfaces are painted and the paint film later becomes broken in any way, chemical action quickly begins between the exposed metal and the atmosphere. This reaction rapidly extends, even under the surrounding paint, literally pushing off the finish and an unsightly product is the result. The increasing use of zinc alloy die castings for products requiring paint, enamel or lacquer, demands a faster, more efficient method of preparing the surface for receiving the final finish. Weathering is too slow and painting over an untreated surface is ineffective.

The improved Bonderizing Process is not only well adapted to providing a paint holding and corrosion resisting coating on die castings but its use for this purpose is being extended to galvanized and galvannealed sheets from which many products are fabricated.

Bonderizing is now being applied at the mill on zinc coated sheets being made into eave troughs, gutters, downspouts, roofing and siding. It is being applied to panels for boats, truck bodies and signs.

This development in the Bonderizing Process marks another stride in the progress towards effective metal protection and product improvement. This will give fabricators of zinc coated sheets the same paint holding qualities and corrosion resistance that have been provided for iron and steel.







BUILDING ACCEPTANCE FOR

have been consistently advertised in the largest, best read magazines. Millions of consumers have seen Parker advertising in the Saturday Evening Post. Colliers. Time, and other national magazines until Parker Processes have become synonymous with rust proofing in the minds of buyers of automobiles, household equipment, office equipment, electrical devices, and hundreds of other articles on which rust is apt to affect operating efficiency and finish appearance.

With this continuous sales and advertising effort, widespread knowledge of the value of Parker Processes is being indelibly impressed upon the minds of everyone who uses iron or steel and is creating a preference for this type of rust-proofing, which becomes more and more valuable to all manufacturers who are using Bonderizing in their finishing operations.

Through this national advertising, the buying public is being made "rust-conscious" and is developing a greater appreciation of the quality appeal. It is giving point and value to the manufacturer's statement: "This product is protected from rust by the Parker Processes."



BONDERIZED PRODUCTS



IN addition to the consumer advertising on Parker Processes, the Parker rust-proofing message is carried every month to hundreds of thousands of producers in scores of industries by a considerable list of trade papers, as well as the PARKERIZER, a special house organ that is sent each month to more than 20,000 individuals. This not only informs the prospective user of Parker Processes, of their merits, but it also informs industrial buyers who purchase fabricated parts for their own output and who require rust-proof finishes on the equipment they purchase.

Both manufacturers and consumers know and appreciate the extra quality that Parker Processes provide. For more than a generation they have been educated in the extra service that may be expected of the Parker-protected product. The matter of rust prevention by phosphate coatings produced by the Parker Processes has been made the subject of scientific bulletins, technical addresses and classroom instruction.

Whether your customers are consumers or industrial users, rust-proofing and finish durability are tangible, constructive features that indicate careful, conscientious building in all details. Parker Processes give the product a selling advantage over competing lines that are less carefully finished.

With this continuous barrage of informative advertising coming to the attention of the buying public—to engineers, architects, maintenance men, merchandising managers or the housewife who buys home equipment, the manufacturer who uses the Parker Process presents this extra feature to an informed audience that knows and fully appreciates the extra rust-free service that can be expected of the Parker-protected equipment that is offered for consideration.

MANUFACTURERS FEATURE VALUE OF

in
CATALOGS, SALES
MANUALS, DISPLAY,
PUBLICATION
ADVERTISING
AND BY RADIO

IN addition to complete descriptions of all the mechanical features of their products, many manufacturers regard finishes as one of the most important items. Finish is the first thing the prospective buyer sees and the way it lasts and maintains fine appearance and adequate protection is vital. Finish quality may make or lose the sale.

For this reason many manufacturers make use of Parker protected finish as an outstanding sales and advertising feature. Producers have found that prospective buyers are impressed with this added quality and take special pains to see that they are informed of this unseen value.

Many of us have seen the paint, enamel or lacquer chip and peel off our prized possessions, because the manufacturer failed to provide a rust-preventing paint base for his final finish, all of which could have been avoided had the manufacturer taken proper precautions in surface preparation before the finish was applied.



BONDERIZING IN THEIR ADVERTISING



UNLIKE many other qualities which are in plain sight and subject to demonstration in most cases, the rust inhibiting value of the Bonderizing is hidden and depends upon the salesman or advertising literature to bring it to the prospect's attention.

So important is this regarded by many manufacturers that they devote space in their catalogs, booklets and folders to the item of rust-proof finishes. In some cases special advertising pieces are devoted entirely to the matter of rust-proofing. Others make a considerable point of it in their publication advertising.

Bonderizing, especially, is an invisible quality that must be exploited to be of greatest sales and advertising value and the smart salesman can make it a distinct selling aid, if he will take pains to bring it to the prospect's attention. Knowing this, manufacturers devote chapters or sections in their sales manuals to the merits of their Bonderized finish. Whether the salesman is a factory representative, or the man on the firing line selling the goods over the counter or on the sales floor, he finds this to be a big help to him.

In addition to being a factor in product improvement, protection from rust by Bonderizing gives the sales department a selling and advertising advantage.

THE PARKER ORGANIZATION AND HOW IT SERVES ITS CUSTOMERS

THE Bonderizing Chemical is supplied in concentrated form, which, when mixed with water, produces the Bonderizing solution. The Bonderizing Chemical is the result of exhaustive research in our own laboratories and practical application to actual production, and contains every element necessary to making a highly efficient rust-proofing solution.

We sell our patented materials for processing all articles manufactured by you, including such goods as you may purchase elsewhere and sell as your product, or license you under our process claims.

You are privileged to discontinue operating the process at any time without cause. Our materials are supplied at prices and on terms established by us, which prices and terms are uniform and without discrimination among all users.

With all the essential ingredients for renewing the processing bath combined in a single, readymixed compound, the operator deals with only two elements, the Bonderizing Chemical and water, which reduces the possibility of error to the absolute minimum.

As the Parker Processes are used on scores of different products in varied equipment from small still tanks to huge conveyor equipment, an engineering staff is maintained to help the prospective user install the type that will be best adapted to his production requirements.

Quite frequently installations are of such size as to require engineering service, both in locating the equipment and the development of economical, timesaving methods.

This department has had experience in the layout and operation of scores of rust-proofing plants, both large and small. The staff is in position to make suggestions and furnish blueprints for ideal plant layout, or to design special equipment for the handling of material of out-of-the-ordinary shape or size.

If the customer's requirements are in any way complicated, careful engineering data will be collected, and operating and floor plans will be worked out, based on practical experience in the installation of efficient and economical equipment in actual operation.

Once the process is installed in the manufacturer's production line, it becomes subject to periodical checking by expert practical operators from the Parker staff. This is a continuing free service provided to assure the manufacturer the greatest possible benefit from the rust-proofing operation.

These checks are made at the convenience of the owner, for the purpose of making sure of the operator's complete understanding of the process and offering suggestions, if necessary, in regard to proper cleaning and the best methods of processing varied production and to check heating and maintenance of the solution, as well as observing final finishing methods.

As these service men visit hundreds of processing installations during a year, they have accumulated a fund of metal cleaning, processing and finishing information that is invaluable to the operator whose opportunities for varied experience are limited. Their knowledge of short-cuts and experience in meeting especially difficult or obscure finishing conditions is available to the user of Bonderizing. They have had experience with practically every type of product and, should new problems arise, or a new application develop, they can intelligently outline proper procedure.

Parker service does not end with the sale of the process and installation of equipment, but follows through as long as the manufacturer makes use of it. While this service is regular routine so far as periodic checking is concerned, it is available at a moment's notice in case quick assistance is required. It is insurance to the customer that he will get the greatest possible service from his rust-proofing investment.





Parker Research chemists are working constantly in the development and improvement of rust-proofing methods.



whose mited.

nce in

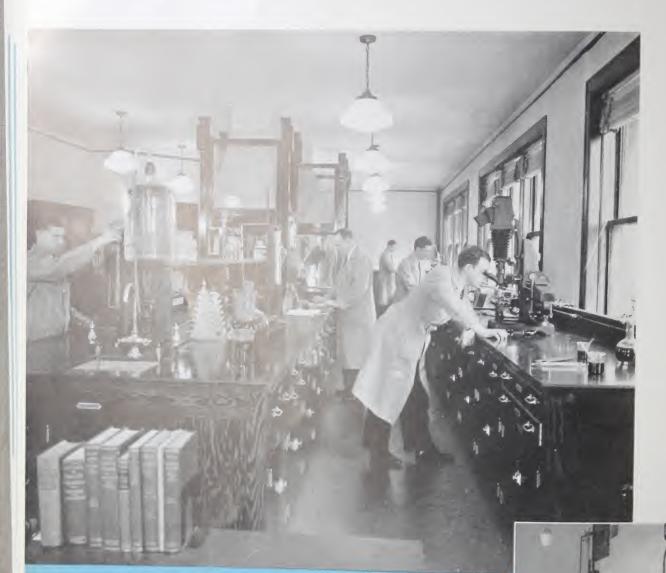
g con-They

pe of new stline

f the llows of it. iodic entis

Chemical plant of the Parker Rust Proof Company, near Detroit,

THE PARKER LABORATORIES



Parker Research Chemists are equipped with every modern device for chemical analysis.

These laboratory facilities are available to Parker customers for checking the work done in their own plants or determining the value of proposed changes in finishing routine.

View showing entrances in talk they room and humidity room in usual

FOR TESTING AND RESEARCH

ACK of the sales and service divisions, a laboratory set-up is maintained for three purposesthe control of raw materials that go into the production of Parker chemicals, testing the efficiency of results obtained by Parker chemicals and research for the development and improvement of Parker Processes.

In addition to this elaborate laboratory equipment Parker has facilities for applying all their processes under actual production conditions, as well as testing devices with which to determine the comparative rust-resistance of the coatings produced. This work is handled by practical finishing experts and trained technicians.

After giving the product its standard finish, it is then subjected to various scientific accelerated tests, beside any other type of finish with which comparison is to be made. These accelerated tests reveal in days what it might take years of actual weathering to find out.

The testing laboratories are of the utmost interest to the Parker customer and are concerned entirely with the problem of proving the value of finishes produced through the use of the Parker Processes, in their actual or prospective applications.

Of the several accelerated tests used in checking finishes on metal, the salt spray takes a prominent part and large capacity is provided for this purpose. This room will accommodate large units, such as refrigerator cabinets, automobile fenders, as well as scores of smaller items at one time. As tests may cover a 25 to 30-day period, the accumulation of pieces under observation may be considerable.

The proper testing of paint, enamel or lacquer finishes requires exposure to humidity and there is a large testing room available for this purpose. This laboratory is also fitted with a paint spray booth, as well as an electrically heated, thermostatically controlled, high temperature baking oven for drying paint finishes over Parker coatings, preparatory to testing.

The research laboratories, with their complete equipment and staff of trained chemists are devoted to the improvement of Parker Processes and to the development of new rust-proofing methods that will be of benefit to industry. As improvements are made in processing methods, any advantages discovered are immediately passed on to the users of Parker Processes.



Processing tanks in the testing laboratory, large enough to represent actual production conditions.



A section of the research laboratory.



Another view in the Parker Res Industratories. 35

HOW PARKER CHEMICALS ARE PACKED AND SHIPPED

ITHOUT any modifications or chemical additions, the Parker Processing chemicals contain every element essential to making highly efficient rust-proofing solutions.

The high concentration of these chemicals permits packing a large amount of rust-proofing energy in a comparatively small container, thus reducing

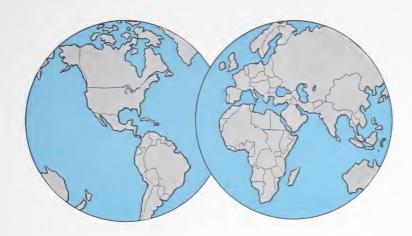
storage facilities and freight costs to a minimum.

The freight classification is "IRON AND STEEL RUST-PREVENTING COMPOUND," which has the benefit of a commodity freight rate.

All Parker chemicals are packed in strong, non-returnable barrels.



PARKER PROCESSES ARE IN WORLD-WIDE USE



FOREIGN ASSOCIATES WHO ARE PREPARED TO FURNISH PARKER SERVICE

PARKER Processes are not only in use all over the United States, but are available through a world-wide organization, with associated companies in every important industrial country where iron and steel are fabricated.

These associated foreign companies are prepared to provide equipment for rust-proofing installations, chemicals for the development of the rust-proofing solutions or furnish a jobbing rust-proofing service for the manufacturer who may not want to install equipment of his own.

All of them are prepared to furnish a technical advisory service for the benefit of prospective users of the Parker Processes:

PARIS, FRANCE	Societe Continentale Parker, 42 Rue Chance-Milly, Clichy (Seine).	MELBOURNE, AUSTRALIA	Harvey Shaw, Successors (D. & W. Chandler, Ltd.), 560 Lonsdale St., Melbourne, Cl.
LONDON, ENGLAND	The Pyrene Co., Ltd., Great West Road, Brentford,	PRAGUE, CZECHO- SLOVAKIA	Prageoferra A. S. Cernokos- telecka 1220 XIII, Strasnice.
	Middlesex.	AUCKLAND, N. Z.	British Australian Lead Mfg.,
TOKYO, JAPAN	Nihon Parkerizing, Kabushiki Kaisha, 37 1-Chome, Minami		New Zealand, Ltd., 113-115 Albert St., P. O. Box 811.
	Rokugo, Kamata-Ku.	OSLO, NORWAY	Holst & Fleischer, Toldbogt 4.
ISAKA, JAPAN	Nippon Parkerizing Co., Ltd., 331 Mitezimacho Nishi, Yodagawa Ku.	COPENHAGEN, DENMARK	Rustbestkyttende Parker Pat- enter, 14 Fredrichschome Havenevj.
SYDNEY, AUSTRALIA	Parkerizing-Bonderizing-Rust- Proofing, Ltd., Harwood 5-7 O'Connell St.	FRANKFURT, GERMANY	Metallgesellschaft, Brocken- heimer Anlage 45.



WHERE LOCAL PARKER SERVICE IS AVAILABLE

POR the benefit of manufacturers whose need for the Parker Processes may be limited or intermittent, jobbing metal finishing plants are located at important commercial centers where the greater part of the iron and steel products of the country are produced. No matter where you are located you are only a few hours distant from adequate Parker service.

		~	
BALTIMORE, MD.	Federal Tin Company, Inc., Parkerizing Dept., Charles and Barre Sts.	LOUISVILLE, KY.	Republic Welding Co., Inc., 305 East College St.
BOSTON, MASS.	Rust-Proofing & Metal Finishing Corp., Commercial Ave. and Binney St., Cambridge A.	MILWAUKEE, WIS.	Wacho Mfg. Co., 3048 W. Galena.
BUFFALO, N. Y.	Parker Rust-Proof Co. of Buffalo, Inc., 1095 Niagara Street.	MINNEAPOLIS, MINN.	Superior Plating & Rust-Proofing Co., East Hennepin Ave. at 7th St. S. E.
CANTON, OHIO	G. C. Reiter	NEW YORK, N. Y.	Pyrene Manufacturing Co., 560
CHICAGO, ILL.	Western Rust-Proof Co, 2139		Belmont Ave., Newark, N. J.
	Walnut St.	PHILADELPHIA, PA.	Philadelphia Rust-Proof Co.,
CINCINNATI, OHIO	The Stolle Corporation, 227- 241 W. McMicken.		3229 Frankford Ave.
CLEVELAND, OHIO	Parker Rust-Proof Co. of Cleveland, 2617 E. 76th St.	PITTSBURGH, PA.	United States Chromium Co., Pitt and Wallace Sts., Wilkins-
DAYTON, OHIO	Dayton Rust-Proofing Co., 736 N. Main St.		Pittsburgh Electro Galvanizing Co., 5th St. and Penna.
DETROIT, MICHIGAN	Parker-Wolverine Co,		R.R., Sharpsburg.
CALABICATIVA E AND	5203 Martin Ave.	ST. LOUIS, MO.	Mid-West Rust-Proof Co.,
EVANSVILLE, IND.	Evansville Plating Works		2110-12 Walnut St.
HOUSTON, TEXAS	Wilson Electrical Equipment Co., 2009 Capitol Ave.	SAN FRANCISCO, CAL.	Best & Company, 2006 Clement Ave., Alameda.
KANSAS CITY, MO.	Bar-Rusto Plating Corp., 1808 Locust St.	TORONTO, ONTARIO,	Fairgrieve & Son, 50 Dover-
LOS ANGELES, CAL.	L. A. Parkerizing Co., 8205 Alameda Blvd.	TORRINGTON, CONN.	Turner & Seymour Company,
			Parkerizing Department

HOW WE FIT BONDERIZING INTO YOUR FINISHING SYSTEM

AFTER studying the preceding data in this book, you may have reached the conclusion that Bonderizing will give your products the desired protection, add a quality that will aid sales, and enhance other outstanding features.

While you may already know considerable about Bonderizing from reading, and possibly seeing it in operation in other plants, you will naturally want to make a more complete investigation as to how it will fit into your finishing routine as well as how it will affect your product, and get some estimate of the cost of operation.

ted or

where

n-Proof

Co., 560 N. J.

f Can

Tilkins

Lemen

Dover

Negotiations will move faster, and a more conclusive opinion can be furnished if samples of your unfinished production can be sent to us for demonstration purposes. Immediately upon receipt of these samples a competent engineer will give your problem careful study.

This will enable us to give you definite suggestions, either personally or by mail, that will apply to your finishing problems. With this data before us, we can more intelligently recommend the type of equipment that will best meet your needs.

If your information indicates that your requirements are large or complicated, detailed engineering data will be furnished, showing the complete layouts and arrangement of the necessary units to handle your particular type of production.

It goes without saying that this more complete investigation costs you nothing. There is no obligation. This is a part of our sales service.

Your finishing executives are invited to be present when your samples are processed, to observe how these, as well as other products, are treated. We will arrange comparative durability tests in our laboratories, to demonstrate the effectiveness of Bonderizing as applied to your product for comparison with samples finished by your regular system.

After a complete investigation, if you decide to install Bonderizing, you will be entitled to the same supervisory service that follows every Parker installation, insuring initial successful treatment as well as continuously successful operation.

THE

PARKER

PROCESSES



BONDERIZING is a fast and highly efficient process for applying a rust inhibiting paint base on many types of products. There is another Parker Process that is applicable to a wide variety of articles, which still further extends the Parker service.

Parkerizing, the original Parker Process, is improved and modernized to meet today's industrial conditions. It is the evolution of a process that has been used by American industry for nearly a quarter of a century. It has become a standard method of finishing for rust control by scores of industries, both large and small, wherever iron and steel are fabricated.

Parkerizing is also a chemical conversion process, whereby the surfaces of iron or steel are changed to an insoluble phosphate coating that is highly resistant to corrosion when combined with stain, oil and wax finishes. It is especially adapted to treating forgings, castings, stampings, screw machine and wire products, on which paint finishes are not necessary or desirable.

Parkerizing has a broad field, because of its simplicity, economy, adaptability and rust-proofing efficiency. Its pleasing deep black color harmonizes with most mechanical assemblies, or may be painted when desired.





esh.

PARKER RUST PROOF COMPANY, DETROIT, MICHIGAN





